

REQUEST FOR RECONSIDERATION
U.S. Patent Application No. 09/738,979

Claims 1, 2, 15 and 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yuuki et al. (US Patent 6,147,725; hereafter "Yuuki") in view of Margerum et al. (US Patent 5,099,343; hereafter "Margerum"). Claims 1, 7-10, 13, 14 and 15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Taira et al. (US Patent 5,712,694; hereafter "Taira") in view of Margerum. Claim 12 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Taira in view of Margerum and Miyashita et al. (US Patent 6,011,602; hereafter "Miyashita"). Claims 3 and 4 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yuuki in view of Margerum and Nakamura (US Patent 6,137,554). Claim 5 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Yuuki in view of Margerum, Nakamura and Taira. Claim 6 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Yuuki in view of Margerum, Nakamura, Taira and Koike (US Patent 6,322,225). Claims 16-18 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yuuki in view of Margerum and Yokota et al. (USP 5,764,315; hereafter "Yokota"). Applicant respectfully submits that the claimed invention would not have been rendered obvious in view of the combined references.

Independent claim 1 recites a liquid-crystal display device comprising a transmission type liquid-crystal display panel including a liquid-crystal cell, a light source disposed on at least one side surface of the liquid-crystal display panel, and an optical path changing sheet disposed on a back side, opposite to a visual side, of the liquid-crystal display panel and having optical path changing slopes by which incident light from the light source is reflected toward the visual side of the liquid-crystal display device. For example, as shown in Figs 1 and 2, one embodiment of the invention includes a liquid-crystal display device comprising a transmission type liquid-

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crystal display panel L including a liquid-crystal cell 70, a light source 91, 93 disposed on at least one side surface of the liquid-crystal display panel L, and an optical path changing sheet 11 disposed on a back side of the liquid-crystal display panel L.

In the Amendment filed February 24, 2003, Applicant argued that claims 1-10 and 12-19 should be allowable because one of ordinary skill in the art would not have been motivated to modify the display device of Yuuki or Taira (the primary references) to dispose a light source on a side of the liquid-crystal display panel and to add a separate optical path changing sheet, as instructed in your letter February 21, 2003. In the "Response to Arguments" section of the Office Action, the Examiner states that "Applicant's ONLY arguments are as follows" and proceeds at attempting to characterize the *secondary* arguments in the Amendment filed February 24. Namely, the Examiner characterizes Applicant's arguments as centering around Margerum, and specifically that "[o]ne of ordinary skill in the art would not be motivated to provide an optical path changing sheet in the Margerum display device." However, the Examiner did not respond to the *primary* argument for patentability (set forth on page 5 of the Amendment filed February 24) that one of ordinary skill in the art would not have been motivated to modify the display device of Yuuki or Taira (based on the teachings of Margerum) to produce the claimed invention.

As discussed in the Amendment, Yuuki discloses a light source 13 that is disposed on a side surface of a light guide plate 11 rather than on a side surface of a liquid-crystal display panel unit 20 (formed by a TFT liquid crystal panel 21 and polarizing plates 16 and 17). See Fig. 3, for example. Light from the light guide plate 11 is then directed upward to the TFT panel 21 of the

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liquid-crystal display panel by a plurality of reflecting members 50a-50f arranged at a bottom part of the light guide plate, as shown in Fig. 3.

Similar to Yuuki, Taira (Figs. 14, and 15) discloses a light source 101 disposed on a side surface of a light guide plate 103 rather than on a liquid-crystal display panel (not shown). Light 112 emitted from the top of the light guide plate 103 is then made incident on a liquid-crystal panel by a saw-toothed light-reflecting boundary face 1306 of the light guide plate 103. See Taira at: col. 13, line 50 - col. 14, line 43.

As the Examiner correctly notes, neither Yuuki nor Taira disclose a light source is disposed on the side surface of a liquid-crystal display. Rather, Yuuki teaches that the lamp 13 is disposed on the side of the light guide plate 31 having reflecting members 50a-50f. Similarly, Taira teaches disposed on a side surface of a light guide plate 103 having the saw-toothed light-reflecting boundary face 1306. Accordingly, it is not necessary to provide a separate optical path changing sheet to change the traveling direction of the light toward the visual side. On the other hand, according to the present invention, light emitted from the light source 91 is transmitted through the liquid-crystal display panel L for light transmission and the light is made incident on the optical path changing sheet 11 and reflected toward the visual side as shown in Fig. 1.

Although Yuuki and Taira do not provide any suggestion or motivation for modifying their respective display devices to dispose a light source on a side of the liquid-crystal display panel and to add a separate optical path changing sheet, the Examiner (page 19 of the Office Action) states "Margerum was applied only to show that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add direct edge lighting of the LCD

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[to the display devices of Yuuki and Taira] to improve contrast under bright ambient light conditions relative [to] conventional back-illumination." However, Margerum uses a unique liquid crystal (illustrated in Fig. 4 and described in column 5, line 9-31) which has a function of light scattering and light transmission. Accordingly, Margerum never requires an optical path changing sheet since the liquid crystal itself has light scattering and light transmission. If an optical path changing sheet is provided to Margerum, it will destroy the function of the liquid crystal since the sheet changes the traveling direction of the light regardless of the expected control function of the liquid crystal.

Therefore, one of ordinary skill in the art would not have been motivated to modify the display device of Yuuki or Taira based on the teachings of Margerum to dispose a light source on a side of the liquid-crystal display panel and to add a separate optical path changing sheet. Accordingly, Applicant respectfully submits that independent claim 1, as well as dependent claims 2-19 should be allowable over the combined references.

With regards to new dependent claim 19, the Examiner contends that "mere disposal of the light source in contact with at least one side surface of the liquid-crystal display panel is considered an obvious species of the claimed invention, not patentably distinct."¹ Further, the Examiner asserts that "[t]hose of ordinary skill in the art of liquid crystals would consider

¹ The Examiner comments regarding claim 19 and "species" are not understood (e.g., "Applicant equivocates said species (Specification page 13, lines 20-23) by pointing out that either of said species may be used alone or in combination"). The Examiner appears to be confusing this feature of the present invention as relating to the number of side surfaces of the LCD panel on which the light source(s) may be disposed (i.e., on one side surface of the LCD panel as shown in Figure 1 or on two side surfaces of the LCD panel as shown in Figure 2).

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disposal of the light source in contact with (and/or not in contact with) at least one side surface of the liquid-crystal display panel to have art-recognized suitability for the intended purpose of illuminating a display.”

However, Applicant respectfully submits that the Examiner has not established a *prima facie* case of obviousness with regards to the subject matter of claim 19. To establish a *prima facie* case of obviousness under 35 U.S.C. § 103, there must be some suggestion or motivation to modify to combine the reference teachings. “To support the conclusion that the claimed invention is directed to obvious subject matter, either references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the reference.” *Ex parte Clapp* 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

In the present case, the Examiner maintains that “Applicant has not disclosed any written support for any embodiment or species wherein the light source is disposed explicitly in contact with (or explicitly not in contact with) at least one side surface of the liquid-crystal display panel as claimed.” Further, the Examiner states that he “concludes, by lack of any contrast in the specification, and by lack of any functional distinction, that said species (light source in contact, and light source not in contact) are functionally equivalent and suitable for the purpose of illuminating a display.” However, the Examiner is directed to page 13, line 4 through page 15, line 7 which discuss the position of the light source and Figures 1, 2, 4, 5 and 6 which clearly show the light source is disposed on and in direct contact with a side surface of a liquid-crystal display panel.

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In addition, it is well settled that the characterization of certain limitations or parameters as obvious does not make the claimed invention, considered as a whole, obvious. It is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This burden can only be satisfied by an objective teaching in the prior art or by cogent reasoning that the knowledge is available to one of ordinary skill in the art. See *In re Lulu*, (747 F.2d 703, 223 U.S.P.Q. 1257 (Fed. Cir. 1984)). However, in the present case the Examiner has failed to provide any objective reasoning why one of ordinary skill in the art would have been motivated to modify the combined references to produce this feature of claim 19. Further, the Examiner does not point out any portion of the combined which suggests the desirability of modifying the references' teachings.

Yuuki, Taira and Margerum, alone or combined, do not teach or suggest that the light source is disposed on and in contact with a side surface of a liquid-crystal display panel, as shown in Figures 1 and 2 of the present application. Rather, as discussed above, Yuuki and Taira each disclose that the light source is disposed on the side surface of the light guide plate such that light emitted from the light source is directed toward the liquid crystal panel by the light guide plate and passes through at least a polarizing plate, disposed between the light guide plate and the liquid crystal display panel, before reaching the liquid crystal display panel. Margerum discloses that a polarizer 50, 52 and a diffuser 46, 48 are interposed between the light source 34, 36 and the side edge 38, 40 of the display panel 12 (i.e. the light source is not directly mounted on the display panel). Similarly, Miyashita, Nakamura and Yokota fail disclose this feature of the present invention.

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Accordingly, Applicant respectfully submits that it is quite clear that the combination of Yuuki and Margerum and the combination of Taira and Margerum would not result in a liquid-crystal display device wherein the light source is disposed on and in contact with a side surface of a liquid-crystal display panel, as recited in claim 19.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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23373

CUSTOMER NUMBER

Date: August 20, 2003

Attorney Docket No.: Q62369